

CLAIMS

WE CLAIM:

1. A method comprising:
mounting a window above an active area on a first
5 surface of a sensor device, said sensor device
comprising a bond pad on said first surface;
mounting a step up ring above a noncritical region
of said first surface between said bond pad and said
active area; and
10 electrically connecting a trace on said step up
ring to said bond pad.
2. The method of Claim 1 wherein said mounting a
step up ring comprises directly mounting a first
15 surface of said step up ring to said noncritical
region.
3. The method of Claim 1 wherein said step up
ring is mounted around said window.
- 20 4. The method of Claim 3 wherein said step up
ring comprises a central aperture, said window being
located in or adjacent said central aperture.
- 25 5. The method of Claim 1 wherein said sensor
device is one of a plurality of sensor devices
integrally connected together in a wafer.
6. The method of Claim 5 wherein said step up
30 ring is one of plurality of step up rings integrally
connected together in a sheet, said method further
comprising mounting a first surface of said sheet to a
first surface of said wafer.
- 35 7. The method of Claim 6 further comprising

singulating said wafer.

8. The method of Claim 1 wherein said mounting a
step up ring comprises mounting a first surface of said
5 step up ring to a window support layer above said
noncritical region.

9. The method of Claim 8 wherein said window is
mounted above said active area by said window support
10 layer.

10. The method of Claim 1 wherein said window is
mounted above said active area by a window support.

11. The method of Claim 1 wherein said
15 electrically connecting a trace on said step up ring to
said bond pad comprises wire bonding said trace to said
bond pad with a bond wire.

12. The method of Claim 11 further comprising
20 forming a package body to enclose said bond wire.

13. The method of Claim 1 wherein said step up
ring comprises a central aperture, said method further
25 comprising filling said central aperture with an
encapsulant to form a package body.

14. The method of Claim 13 wherein said mounting
a step up ring above a noncritical region comprises
30 mounting said step up ring around said window such that
said window is located in or adjacent said central
aperture.

15. The method of Claim 1 wherein said sensor
35 device is an image sensor.

16. The method of Claim 15 wherein said active area is responsive to radiation.

5 17. A method comprising:

mounting a window above an active area on a first surface of a sensor device; and

10 directly attaching a first surface of a step up ring to said first surface of said sensor device, said step up ring being mounted around said window.

15 18. The method of Claim 17 wherein said directly attaching comprises directly attaching said first surface of said step up ring to said first surface of said sensor device with adhesive.

20 19. The method of Claim 17 wherein said sensor device comprises a bond pad on said first surface of said sensor device, a noncritical region of said first surface of said sensor device being between said active area and said bond pad, said directly attaching comprises directly attaching said first surface of said step up ring to said noncritical region.

25 20. The method of Claim 19 further comprising electrically connecting said bond pad to an electrically conductive trace on a second surface of said step up ring.

30 21. The method of Claim 20 wherein said electrically connecting comprises forming a bond wire between said bond pad and said trace.

35 22. The method of Claim 20 further comprising forming an interconnection ball on said trace.

23. The method of Claim 17 wherein said sensor device is one of a plurality of sensor devices integrally connected together in a wafer.

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24. The method of Claim 23 wherein said step up ring is one of plurality of step up rings integrally connected together in a sheet, said method further comprising mounting a first surface of said sheet to a first surface of said wafer.

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25. The method of Claim 23 further comprising singulating said wafer.

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26. A method comprising:

mounting a window above an active area of an image sensor by a single window support layer having a first surface in contact with a first surface of an image sensor substrate comprising said image sensor; and

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directly attaching a first surface of a step up ring to a second surface of said window support layer, said step up ring being mounted around said window.

27. The method of Claim 26 wherein said image sensor comprises a first surface, said active area and a bond pad of said image sensor being on said first surface of said image sensor, a noncritical region of said first surface of said image sensor being between said active area and said bond pad, said step up ring being mounted above said noncritical region.

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28. The method of Claim 27 further comprising electrically connecting said bond pad to an electrically conductive trace on a second surface of said step up ring.

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29. The method of Claim 26 further comprising singulating said image sensor substrate.